



Science in Motion - Ursinus College

December 2018

SIM PROGRAM UPDATE

Science in Motion is a program designed to bring hands-on activities, mobile educators and state-of-the-art equipment to students in Pennsylvania schools. Purchasing and maintaining up-to-date equipment to be used for just a few days each year is financially prohibitive for most schools. However, this cost-effective program enables many schools and thousands of students to share equipment. Over the years, it has been proven to improve science education outcomes and inspire students to pursue careers in science and technology. We are pleased to report that this program has been funded by the PA Department of Education for the 2017-2018 school year. We are still waiting to hear the details of our funding, but hope to be serving teachers by the first of October. We encourage you to consider how the Science in Motion program can support the learning goals of your classes. Go on our website and check out the experiments and equipment available to you. The details of how to use the program are given below, along with some notes about a few of our most popular labs. Remember, there is no cost to school districts or teachers to use this program.

SCHEDULING A VISIT

Using the program is easy. You just need to go to our website:

<https://www.ursinus.edu/offices/science-in-motion/>

On the homepage, choose "Laboratory Experiments." You will see a listing of labs we support. Click on any of the experiments and download copies of the student lab sheets and teacher notes to determine if the lab fits your needs. We can supply everything needed to do a lab as written, or you can borrow the equipment to supplement your own labs. We can also provide private instruction on how to use the equipment, assist during your class, or lead the class activity. Once you have decided what experiments you would like to do, submit a Chemistry/Physical Science or Biology Scheduling Form found at the "Forms" link on the left side of the homepage. You should get a response within a day or two. Often, we can provide exactly what you want; other times, we will suggest alternate dates when the equipment is available.

We have found it's helpful to have teachers at a school coordinate their reservations. If several teachers plan to do the same lab, schedule it in one block of time, instead of scheduling separately. Just be sure the scheduling form indicates the total number of teachers, classes and students that will use the equipment. We need that for annual reporting purposes! When you are done with the borrowed materials, open the "Forms" tab on the homepage and send in a Feedback form that records the number of classes and students who used the lab. These Feedback forms are essential to future funding for the program.

EXAMPLES OF EQUIPMENT AND ACTIVITIES AVAILABLE

CHEMISTRY/PHYSICS

Most of the chemistry/physics equipment uses Vernier **LabQuest interfaces** to easily collect and analyze data. Some of our more popular requests include:

Alternative Energy – Solar panels and fuel-cell H₂-powered model cars.

Forensics – Heist scenario involving evidence analysis by FT-IR, differential fabric staining, TLC, GC and melting points.

Environmental Science – Preparation of biodiesel and fuel lamps for measuring the energy content of various fuels; stream study.

Organic chemistry – FT-IR's, mini-GC's, melting point apparatus and model kits.

Nuclear chemistry – Radiation monitors and radioactive sources.

Gas Laws – Gas pressure sensors for investigating Boyle's Law and P vs T. relationships.

Molecular Spectroscopy – Colorimeters and spectrometers; can collect complete absorbance spectrum and/or create Beer's Law plots.

Atomic Emission Spectroscopy – Vernier power supplies and spectrum tubes; spectrometers.

Physics equipment – Motion detectors, photogates, picket fences and more.

SIM CONTACT INFORMATION

WHO ARE WE?

BIOLOGY

We have many labs available. Here are some of the most popular labs requested:

Forensics - Sherlock Bones Lab - students use forensic tools and measurements to identify sex, age, race and height of an individual based on skeletal remains.

Immunoassay - Students solve a crime using a technique to identify blood samples.

Environmental - Complexity of global warming lab.

Evidence of Evolution - Students look at various evidence (embryology, DNA, fossils, etc.) used to support the theory of evolution.

Faces Lab - Students make composite sketches using the same program used by the FBI.

DNA/Genetics - Gel electrophoresis labs, virtual fruit fly lab.

Digital Microscopes - Cell cycle lab, view protists, etc.

Cellular Respiration - Students use sensors to compare carbon dioxide production from four organisms.

ENVIRONMENTAL SCIENCE

Climate Change - Complexity of global warming lab.

Alternative Energy – Solar panels and fuel-cell H₂-powered model cars; solar homes with thermal mass

Stream Study

Heat Energy of Various Fuels

EQUIPMENT LIST

Please see our website for a list of all our equipment and supplies.

See our website for full bios:

www.ursinus.edu/offices/science-in-motion/

Erin Benfer – Mobile Chemistry/Physics Educator
ebenfer@ursinus.edu

Erin has taught science for the past 18 years, and loves every moment of it. She has worked with a variety of students, and enjoys the one-on-one interaction with students that occurs in laboratory settings. She can't wait to meet yours!

Aimee Loladze- Mobile Biology Educator
aloladze@ursinus.edu

Ron Faust – Mobile Educator Mentor
rfaust@ursinus.edu

Ron has taught science all his life. He taught biology at The Center for Arts and Technology in Phoenixville for 19 years and at Downingtown high school for 16 years. After retiring from teaching, he worked for the Science in Motion program for 10 years. He is back out of retirement to help the new mobile educators get the program up and running.